WHAT IS CLAIMED IS:

1. A catheter for treating a vascular occlusion comprising:

an elongated shaft defined by a proximal section and a distal section wherein the shaft is formed with at least one lumen extending from the proximal section to the distal section of the shaft;

at least one hinged spreading member formed at the distal section of the shaft wherein the spreading member is defined by a distal most end that moves away from the longitudinal axis of the shaft to disrupt a vascular occlusion; and

an actuating assembly positioned along the elongated shaft to move the distal most end of the spreading member in response to an actuation force.

2. The catheter as recited in claim 1, wherein at least one hinged spreading member includes a relatively interior portion formed with a cam follower.

3. The catheter as recited in claim 2, wherein the actuating assembly includes an actuation element defined by a distal end and a cam formed at the distal end for communication with the cam follower formed in at least one spreading member to urge the spreading member in a substantially lateral direction.

4. The catheter as recited in claim 3, wherein the cam is configured as a central hub that slidably contacts the cam follower formed on the interior portion of at least one hinged spreading member when the cam is moved in a relatively proximal direction to move the distal most end of the spreading member in a substantially lateral direction.

5. The catheter as recited in claim 3, wherein the cam is formed with a cam edge that slidably contacts the cam follower formed on the interior portion of at least one hinged spreading member when the cam is moved in a relatively distal direction to move the distal most end of the spreading member in a substantially lateral direction.

6. The catheter as recited in claim 3, wherein the distal section of the shaft is formed with a co-linear bearing surface.

7. The catheter as recited in claim 6, wherein the cam is configured for slidable movement along the co-linear bearing surface and the cam follower of a single hinged spreading member.

8. The catheter as recited in claim 1, wherein the distal section of the elongated shaft contains a nosecone.

9. The catheter as recited in claim 1, wherein the distal section of the elongated shaft contains a hub defined by an external surface.

10. The catheter as recited in claim 9, further comprising a collar section fitted around the external surface of the hub.

11. The catheter as recited in claim 10, wherein at least two hinged spreading members are joined to the collar section as a unitary body.

12. The catheter as recited in claim 1, wherein the hinged spreading member is defined by a substantially curved end.

13. The catheter as recited in claim 1, wherein the hinged spreading member is defined by a substantially tapered end.

14. The catheter as recited in claim 1, wherein the hinged spreading member is defined by a substantially pointed end.

15. An intravascular tissue expanding catheter comprising:

a catheter shaft defined by a distal end and a longitudinal axis having at least one conduit extending along the longitudinal axis of the catheter shaft;

a housing formed at the distal end of the catheter shaft wherein the housing includes at least one hinged deflecting member defined by a distal most tip that moves in a substantially lateral direction away from the longitudinal axis of the shaft to expand vascular tissue; and

an actuation assembly positioned along the catheter shaft to move the distal most tip of at least one hinged deflecting member away from the longitudinal axis of the shaft.

16. The intravascular catheter as recited in claim 15, wherein the shaft is formed of braided material and an inner coil shaft component.

17. The intravascular catheter as recited in claim 15, wherein the housing is formed of deformable material and wherein the actuation assembly includes an expandable balloon formed at the distal end of the catheter shaft positioned within the housing and an inflation conduit formed along the longitudinal axis of the catheter shaft.

18. The intravascular catheter as recited in claim 17, wherein the expandable balloon expands to spread open at least one deflecting member so that the distal most tip of the deflecting member moves in a substantially lateral direction away from the longitudinal axis of the catheter shaft.

19. The intravascular catheter as recited in claim 15, wherein the deflecting member includes an integrally formed hinge.

20. The intravascular catheter as recited in claim 15, wherein the deflecting member includes a hinge that is separately formed and connected to the spreading member.

21. The intravascular catheter as recited in claim 15, wherein the deflecting member includes a plurality of hinges.

22. The intravascular catheter as recited in claim 15, wherein at least one deflecting member is formed with an internal cam follower.

23. The intravascular catheter as recited in claim 22, wherein the actuation assembly includes a cam positioned within the housing for slidable movement along the cam follower of at least one deflecting member to move the distal most tip of the deflecting member in a substantially lateral direction.

24. The intravascular catheter as recited in claim 23, wherein the actuation assembly includes an actuation conduit formed along the catheter shaft and a push tube positioned relatively proximal to the cam follower within the actuation conduit.

25. The intravascular catheter as recited in claim 23, wherein the actuation assembly includes an actuation conduit formed along the catheter shaft and a rotational tube positioned relatively proximal to the cam follower within the actuation conduit.

26. The intravascular catheter as recited in claim 23, wherein the actuation assembly includes an actuation conduit formed along the catheter shaft and a pulling element positioned relatively proximal to the cam follower within the actuation conduit.

27. The intravascular catheter as recited in claim 15, wherein the actuation assembly includes a pulling element connected to at least one deflecting member.

28. The intravascular catheter as recited in claim 27, wherein the deflecting member is connected to the housing with a hinge pin to form a hinge that supports rotation of at least one deflecting member when the pulling element is pulled in a relatively proximal direction.

29. The intravascular catheter as recited in claim 27, wherein the deflecting member and the housing are integrally formed of nitinol to provide a rivetless hinged section that supports deflection of at least one deflecting member when the pulling element is pulled in a relatively proximal direction.

30. The intravascular catheter as recited in claim 27, wherein the pulling element is formed of nitinol.

31. The intravascular catheter as recited in claim 15, wherein the catheter shaft is defined by an external surface and a guidewire conduit is formed within the external surface of shaft.

32. The intravascular catheter as recited in claim 31, wherein the guidewire conduit is formed offset from the longitudinal axis of the shaft.

33. The intravascular catheter as recited in claim 15, wherein the catheter shaft is defined by an external surface and a guidewire conduit is formed along the external surface of shaft.

34. An intravascular catheter comprising:

a catheter body formed with a distal section and at least one conduit;

at least one tissue expanding member connected to the distal section of the catheter body wherein the expanding member includes a relatively proximal portion and a relatively distal portion so that the distal portion is configured to spread apart relative to the proximal portion of the expanding member; and

an actuation assembly positioned within the catheter body in communication with the tissue expanding member to spread apart the distal portion of the expanding member.

35. The intravascular catheter as recited in claim 34, wherein the distal section includes a relatively fixed extension and wherein the relatively proximal portion of the tissue expanding member is connected to the fixed extension with a hinge pin to permit the relatively distal portion of the tissue spreading member to move away from the fixed extension.

36. The intravascular catheter as recited in claim 35, wherein the actuation assembly includes an actuation wire connected to the relatively proximal portion of the tissue expanding member with an actuation wire attachment .

37. The intravascular catheter as recited in claim 36, wherein the distal section is formed with a guidewire lumen.

38. The intravascular catheter as recited in claim 37, wherein the hinge pin is positioned in between the guidewire lumen and the actuation wire attachment within the distal section of the catheter body.

39. The intravascular catheter as recited in claim 37, wherein the guidewire lumen is positioned in between the hinge pin and the actuation wire attachment within the distal section of the catheter body.

40. The intravascular catheter as recited in claim 39, further comprising a guidewire tube extension defined by an outer surface positioned along at least a portion of the fixed extension for enclosing a guidewire.

41. The intravascular catheter as recited in claim 40, wherein the tissue expanding member is formed with a surface that is complementary to the outer surface of the guidewire tube extension.

42. A catheter shaft comprising:

an outer catheter shaft defined by a longitudinal shaft lumen;

an inner coiled body defined by a longitudinal coiled lumen that is positioned within the longitudinal shaft lumen for column load reinforcement of the outer shaft; and

a movable pulling element slidably positioned within the longitudinal coiled lumen for relative movement of the pulling element with respect to the inner coiled body.

43. The catheter shaft as recited in claim 42, wherein the outer shaft is braid reinforced.

44. The catheter shaft as recited in claim 42, wherein the inner coiled body is closely wound.

45. The catheter shaft as recited in claim 42, wherein the outer catheter shaft is substantially defined by an outer diameter ranging from approximately 0.025 to 0.080 inches.

46. The catheter shaft as recited in claim 42, wherein a proximal portion of the inner coiled body is a hypotube.

47. A catheter shaft comprising:

a reinforced outer catheter shaft formed with an outer shaft lumen;

an inner shaft positioned within the outer shaft lumen that is formed with an actuation lumen and at least one inner shaft lumen;

a column load reinforcement coil formed with a coil lumen that is positioned within the actuation lumen; and

an actuation wire slidably positioned within the coil lumen to provide relative movement of the wire within the coil.

48. The catheter shaft as recited in claim 47, wherein at least one inner shaft lumen is configured for placement of a guidewire.

49. The catheter shaft as recited in claim 48, further comprising a guidewire positioned within the inner shaft lumen.

50. The catheter shaft as recited in claim 49, wherein the inner shaft lumen and the actuation lumen are formed in a non-concentric configuration.

51. A reinforced catheter body comprising:

a braid reinforced catheter shaft formed with a longitudinal catheter shaft lumen;

an actuation conduit formed with a longitudinal actuation conduit lumen and a guidewire conduit both positioned within the longitudinal lumen of the catheter shaft;

a coiled support tube formed with a coiled tube lumen positioned within the actuation conduit lumen for column load reinforcement of actuation conduit; and

a pulling element positioned within the coiled tube lumen for relative slidable movement within the support tube.

52. An intravascular catheter for expanding tissue comprising:

a catheter body defined by a distal section that is formed with an outer reinforced shaft coaxially formed about an inner coiled body for column load reinforcement of the catheter body wherein the inner coiled body is formed with an actuation conduit;

a tissue expanding member defined by an interior cam follower connected to the distal section of the catheter body wherein the expanding member includes a relatively proximal portion and a relatively distal portion so that the distal portion is configured to expand relative to the proximal portion of the expanding member; and

an actuation element positioned within the actuation conduit and wherein the actuation element is formed with a cam for communication with the interior cam follower of the tissue expanding member to expand the distal portion of the expanding member when actuated.

53. An intravascular catheter for expanding tissue comprising:

a catheter body defined by a distal section that is formed with an outer reinforced shaft coaxially formed about an inner coiled body for column load reinforcement of the catheter body wherein the inner coiled body is formed with an actuation conduit;

a tissue expanding member connected to the distal section of the catheter body wherein the expanding member includes a relatively proximal portion and a relatively distal portion so that the distal portion is configured to expand relative to the proximal portion of the expanding member; and

an actuation element positioned within the actuation conduit to expand the distal portion of the expanding member when actuated.

54. The intravascular catheter as recited in claim 53, wherein the distal section of the catheter body includes a relatively fixed extension and wherein the relatively proximal portion of the tissue expanding member is connected to the fixed extension with a hinge pin to permit the relatively distal portion of the tissue spreading member to move away from the fixed extension.

55. The intravascular catheter as recited in claim 54, wherein the actuation element is a pull wire connected to the relatively proximal portion of the tissue expanding member with an actuation wire attachment .

56. A catheter for treating a vascular occlusion comprising:

an elongated shaft having a proximal section and a distal section, a longitudinal axis and at least one lumen extending therein;

a tissue displacing assembly having at least one tissue displacing member in the distal section which is configured to rotate about one end thereof away from a longitudinal axis to displace tissue of a vascular occlusion; and

an actuating assembly positioned at least in part within the elongated shaft to rotate an end of the tissue expanding member and configured to be operable from the proximal section of the elongated shaft.